A COMPARATIVE STUDY OF NORMAL AND HARD-TO-COOK BRAZILIAN COMMON BEAN (*Phaseolus vulgaris*): ULTRASTRUCTURAL AND HISTOCHEMICAL ASPECTS

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Legume seeds stored under high temperature and humidity develop a texture defect known as hard-to-cook (HTC). Structural and histochemical characteristics of normal and HTC beans (*Phaseolus vulgaris*) were studied after storing them at 5°C/40% relative humidity (RH) or 40°C/75% RH for 60 days. Cotyledonary cells of HTC beans showed contraction of the cell content, whereas the cytoplasm of normal seeds occupied the total cell volume. Cell walls of HTC beans appear more compact, showing smaller intercellular spaces. In normal beans the cell walls of adjacent cells had larger spaces between them. Pectic material of sections of hard beans stained more intensely than cell walls of hard beans contain more calcium than normal beans. HTC-and-old beans (6 years of storage) were observed under SEM in comparison to irradiated beans. Irradiation of beans caused softening of the seeds. The results confirm involvement of the cell wall-middle lamella in the hardening of bean seeds.

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